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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/995,736	11/29/2001	Zakya H. Kafafi	N.C. 82,530	1869

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EXAMINER
GEMMELL, ELIZABETH M

ART UNIT	PAPER NUMBER
2882	

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/995,736	KAFAFI ET AL.	
	Examiner	Art Unit	
	Beth Gemmell	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 November 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5,7,10-18,20-22,25-31,33-35 and 38-41* is/are rejected.

7)☒ Claim(s) *4,6,8,9,19,23,24,32,36 and 37* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 November 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Information Disclosure Statement

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Claim Objections

Claims 13,15,28 and 41 are objected to because of the following informalities:

- Claims 13,28 and 41 recite the limitation "said metallic cathode" in line 1. There is insufficient antecedent basis for this limitation in the claim.
- Claim 15 recites the limitation "said hole blocking layer" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Appropriate correction is required.

The examiner has examined the above claims as follows:

- Claim 13 depending from claim 12
- Claim 15 depending from claim 14
- Claim 28 depending from claim 27
- Claim 41 depending from claim 40

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3,5,7,10-13 rejected under 35 U.S.C. 102(b) as being anticipated by Shi et al. (US Patent 5,935,721).

Re claim 1: Shi et al. discloses, in figure 1 and throughout the disclosure, an organic light emitting diode comprising: a universal host (20); a hole transporting layer (18); an electron transport layer (22); wherein the hole transporting layer and the electron transport layer are on opposing sides of the universal host, and are in electrical contact with the universal host; wherein the hole transporting layer, the electron transport layer and the universal host together comprise an active portion of the OLED; electrodes on opposing sides of the active portion for providing a bias across the active portion; wherein at least one electrode is transparent (column 56, lines 10+).

Re claims 2,3,6, and 7: Shi et al. discloses doping, which is used in a full color display panel. Therefore, it includes red, green and blue emitting material.

Re claims 10 and 11: Shi et al. discloses, in column 56, lines 10+, a transparent electrode comprises a glass substrate coated with indium tin oxide.

Re claims 12 and 13: Shi et al. discloses, in column 56, lines 30+, a metallic cathode comprising an alloy of Mg and Ag.

Claims 1,14 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Baldo et al. (US Patent 6,097,147).

Re claim 1: Baldo et al. discloses, in figure 2 and throughout the disclosure, an organic light emitting diode comprising: a universal host (113); a hole transporting layer (112); an electron transport layer (115); wherein the hole transporting layer and the electron transport layer are on opposing sides of the universal host, and are in electrical contact with the universal host; wherein the hole transporting layer, the electron transport layer and the universal host together comprise an active portion of the OLED; electrodes on opposing sides of the active portion for providing a bias across the active portion; wherein at least one electrode is transparent (column 4, lines 20+).

Re claims 14 and 15: Baldo et al. discloses, in figure 2 and throughout the disclosure, a hole blocking layer (114) comprising bathocuproine (column 4, lines 35+), inserted between the universal host and the electron transport layer, wherein the hole blocking layer, the hole transporting layer, and the electron transport layer are in electrical contact with the universal host.

Claims 16-18,20,22,25-31,35, and 38-41 are rejected under 35 U.S.C. 102(b) as being anticipated by Borner et al. (US Patent 5,756,224).

Re claim 16: Borner et al. discloses in figure 1 and throughout the disclosure, an OLED comprising: a hole transporting layer (31); an electron transport layer (33) that is also a universal host (32); wherein the hole transporting layer and the electron transport layer are placed in series and are in electrical contact with each other; wherein the hole transporting layer and the electron layer together comprise an active portion of OLED; electrodes (2,4) on opposing sides of the active portion for providing a bias across the active portion; wherein at least one of the electrodes is transparent (column 4, lines 48+).

Re claims 17,18,20,22,30,31,33, and 35: Borner et al. discloses the universal host being doped with red, green and blue emitting material (column 6, lines 10+).

Re claims 25,26,38 and 39: Borner et al. discloses a transparent electrode comprised of a glass substrate coated with a ITO. (column 4, lines 48+).

Re claims 27,28,40 and 41: Borner et al. discloses an electrode comprised of MG and Ag (column 6, lines 63+).

Re claim 29: Borner et al. further discloses, in figure 2, a hole transporting layer (31) that is a universal host (32) and an electron transport layer (33).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 21 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borner et al. in view of Xie et al. (US Patent 5,989,737).

Borner et al. discloses all of the limitations as evidenced above.

However, it fails to teach or suggest using N,N'-diethylquinacridone as the green emitting material.

Xie et al. discloses using N,N'-diethylquinacridone as the green emitting material (column 12, lines 56+).

One of ordinary skill in the art at the time the invention was made would have recognized that using N,N'-diethylquinacridone as the green emitting material is a well known fluorescent material, as further taught by Xie et al, because it would improve the quality of the image produced by the OLED.

Allowable Subject Matter

Claims 4,6,8,9,19,23,24,32,36, and 37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The best prior art of record teaches a conventional OLED, however, they fail to teach or fairly suggest a universal host or electron transport layer comprising 5,5'-bis(dimesitylboryl)-2,2'-bithiophene and a red emitting material comprised of 6,13-

diphenylpentacene, a hole transporting layer comprised of 4,4-bis(1-naphthylphenylamino)biphenyl.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Beth Gemmell whose telephone number is (703) 305-1937. The examiner can normally be reached on Monday-Thursday 6:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

emg
April 10, 2003